

November 29, 1983

Mr. Dick Whittington
Regional Administrator
Environmental Protection Agency
1201 Elm Street
First International Building
Dallas, Texas 75270

Dear Dick:

Re: Aquifer Exemption for Uranium Resources, Inc., Kingsville Dome Mine Site,
Permit No. UR02677, Kleberg County, Texas

Uranium Resources, Inc. is requesting exempted aquifer status for their proposed in situ uranium mine at the Kingsville Dome. A thirty day notice period and opportunity for public hearing is required. The site is located approximately eight miles south of Kingsville in Kleberg County, Texas.

An injection well which causes or allows the movement of fluid that would result in the pollution of an underground source of drinking water is prohibited (31 TAC Section 353.7). The ore zone is located adjacent to an underground source of drinking water (the upper Goliad Formation), therefore, exempted aquifer status is necessary to allow for injection into this formation. The enclosed information is provided by our Underground Injection Control Section staff to facilitate your review and approval of this request. Your office will be advised of any comments received and the Commission's decision regarding a public hearing once the thirty day public hearing notice period has elapsed.

Sincerely yours,

Charles E. Nemir
Charles E. Nemir
Executive Director

Enclosures

cc: TDWR District 12 Office - Corpus Christi

RECEIVED
DEC 01 1983
EPA SAW'S
REGION VI

Application for exempted aquifer status under provisions of UIC Departmental Rules, Chapter 27, for Uranium Resources, Inc., Kingsville Dome Mining Project, Permit No. UR02677.

TECHNICAL SUMMARY

Uranium Resources, Inc. is applying for exempted aquifer status at their proposed in situ uranium mine in Kleberg County, Texas. The Kingsville Dome Project is located approximately eight miles south of Kingsville adjacent to FM 1118. The proposed exemption will be for the Kingsville Dome permit area of 790 acres in the subsurface zone from 520 to 800 feet, or equivalently, 480 to 760 feet below mean sea level. The production zone is located in three sand units of the upper Goliad Formation, each approximately 50 feet thick and confined by overlying and underlying aquiclude. (See Figure 5)

An aquifer or portion of an aquifer may be designated as an exempted aquifer according to the Department's UIC Rules, Chapter 27, if it does not currently serve as a source of drinking water for human consumption and it will not in the future serve as a source of drinking water for human consumption because (as in this case) it is mineral bearing with production capability [U.I.C. Rule No. 156.27.01.025(c) or Texas Administrative Code (TAC) No. 353.25]. The applicant has demonstrated that the aquifer contains commercially producible minerals by expending considerable resources to obtain a mineral lease, developing a permit application, and conducting exploration drilling.

The Goliad Sand is the principal water bearing formation in the Kleberg County area. It supplies small to large quantities of fresh to slightly saline water to public supply, industrial, irrigation, rural-domestic and stock wells. The most concentrated development of the Goliad is at Kingsville where the city pumps water for public supply from 14 wells. One of these wells was test pumped at 980 gpm when drilled in 1967. All of the city wells are from 700 to 900 feet deep and most of them yield water having 1,000 to 1,200 mg/l dissolved solids. Figure 4 illustrates the peziometric surface of the Goliad Sand and the effect of significant withdrawals on this surface.

Within 1/4 mile of the permit area boundary are six water supply wells (labeled [WW] in Figure 2 and Table 1). These wells are all completed in the upper Goliad Formation and are used as domestic water supply wells. There are ten major regional water supply wells within five miles of the proposed permit area. These include water supply for Kleberg Park, Kingsville Naval Air Station, the Pan American School, G. R. Dietert Water Service, and the city of Ricardo. These wells are located in Figure 1 and summarized in Table 2. The attached peziometric map (Figure 4) indicates that the direction of ground water movement in the Goliad Formation, in the Kingsville area, is to the northwest towards the city of Kingsville.

As the uranium ore becomes depleted in the various production areas, restoration will be initiated production area by production area. For an updated mine plan with production and restoration schedules, see Figure 6. The principle restoration method to be used by Uranium Resources, Inc. will be ground water sweep, (sometimes referred to as pore volume flush). The net result of the mining operation will be that the uranium has been made available for use as an energy source and the once-mineralized aquifer can then be returned to its premining uses.

Technical Summary
Permit No. UR02677
Page 2

The proposed in situ uranium mining Permit No. UR02677 is subject to the approval of this proposed exempted aquifer status by the Commission and the Regional Administrator (the EPA).

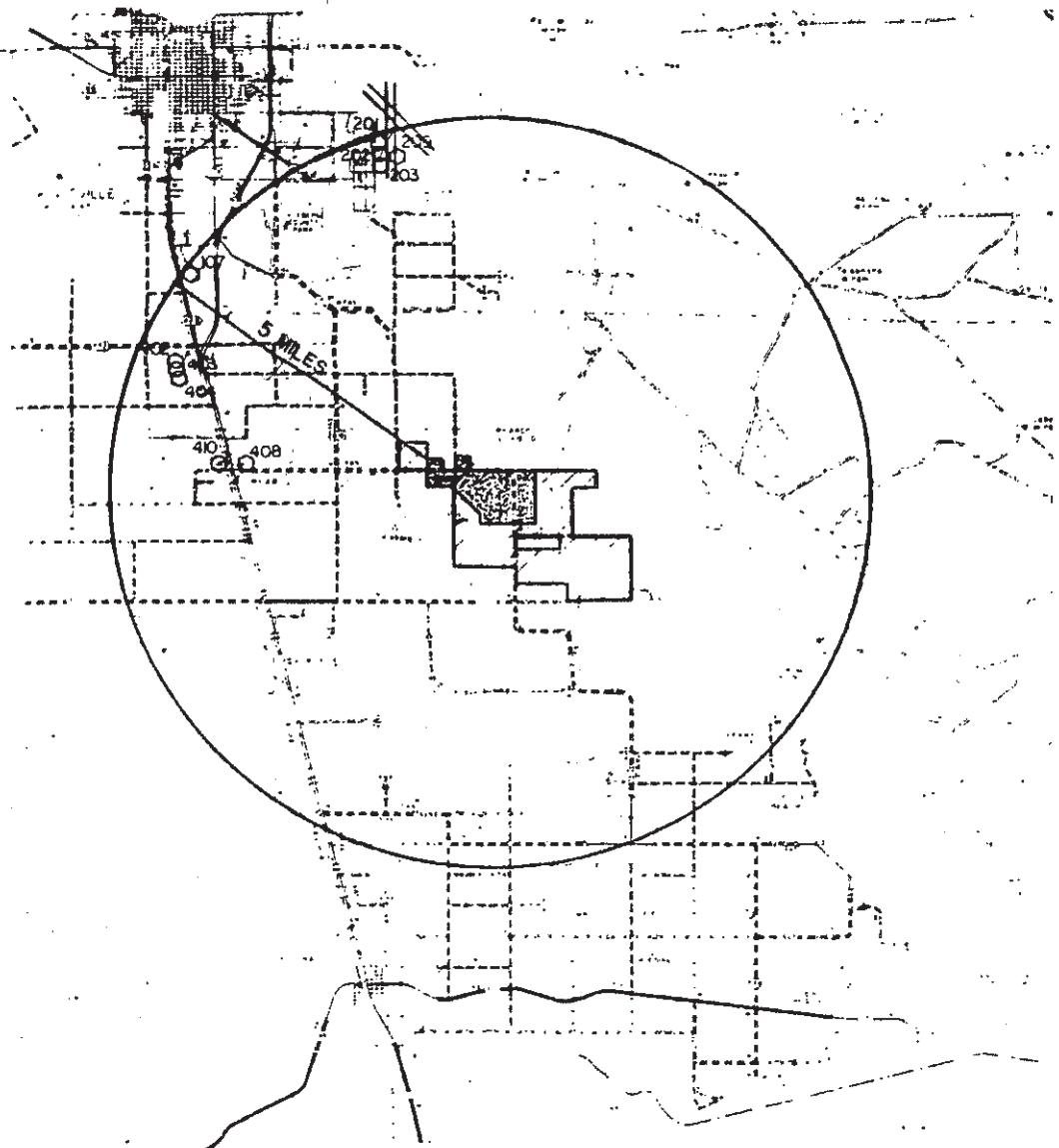
Prepared by:

William P. Overesch
William P. Overesch, Geologist
Solution Mining Unit
Underground Injection Control Section

Approved by:

Charles Greene
Charles Greene, Head
Solution Mining Unit
Underground Injection Control Section

Bill Klemt
Bill Klemt, Chief
Underground Injection Control Section



PERMIT AREA



LEASE AREA IN
ADDITION TO
PERMIT AREA



PUBLIC WATER
SUPPLY WELL
LOCATION

O 107

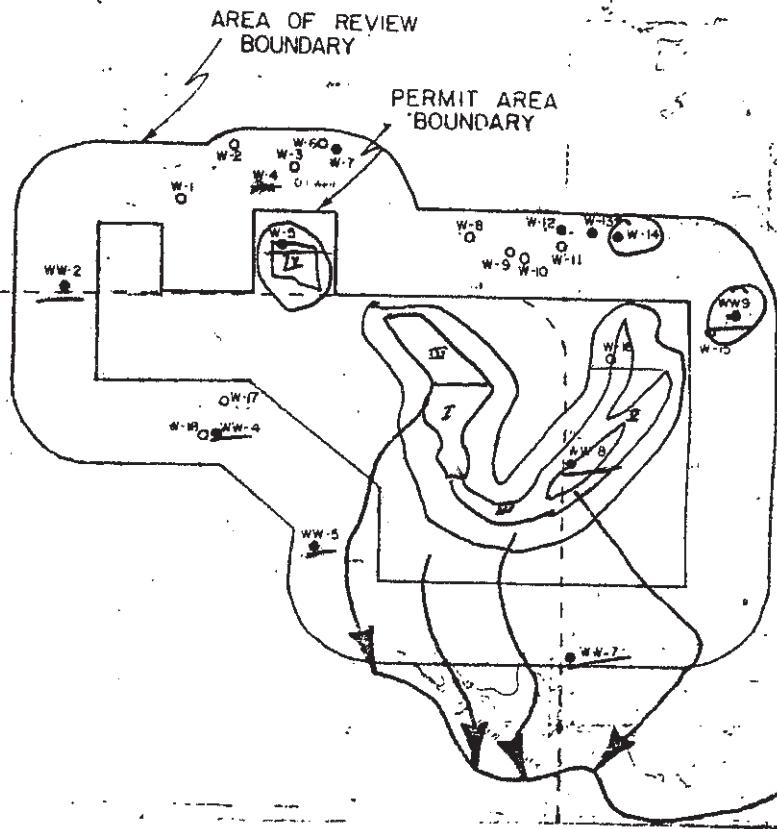
URANIUM RESOURCES INC.

KINGSVILLE DOME PROJECT PERMIT AREA LOCATION

FIGURE 1

BASE FROM
GENERAL HIGHWAY MAP
**KLEBERG COUNTY
TEXAS**

TEXAS STATE HIGHWAY DEPARTMENT
PLANNING AND RESEARCH DIVISION
U. S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION



PERMIT AREA TOPOGRAPHY AND AREA OF REVIEW

EXPLANATION
 W = OIL OR GAS HOLE OR WELL
 W-W = WATER WELL, RESIDENCE
 -> DIRECTION OF RUNOFF

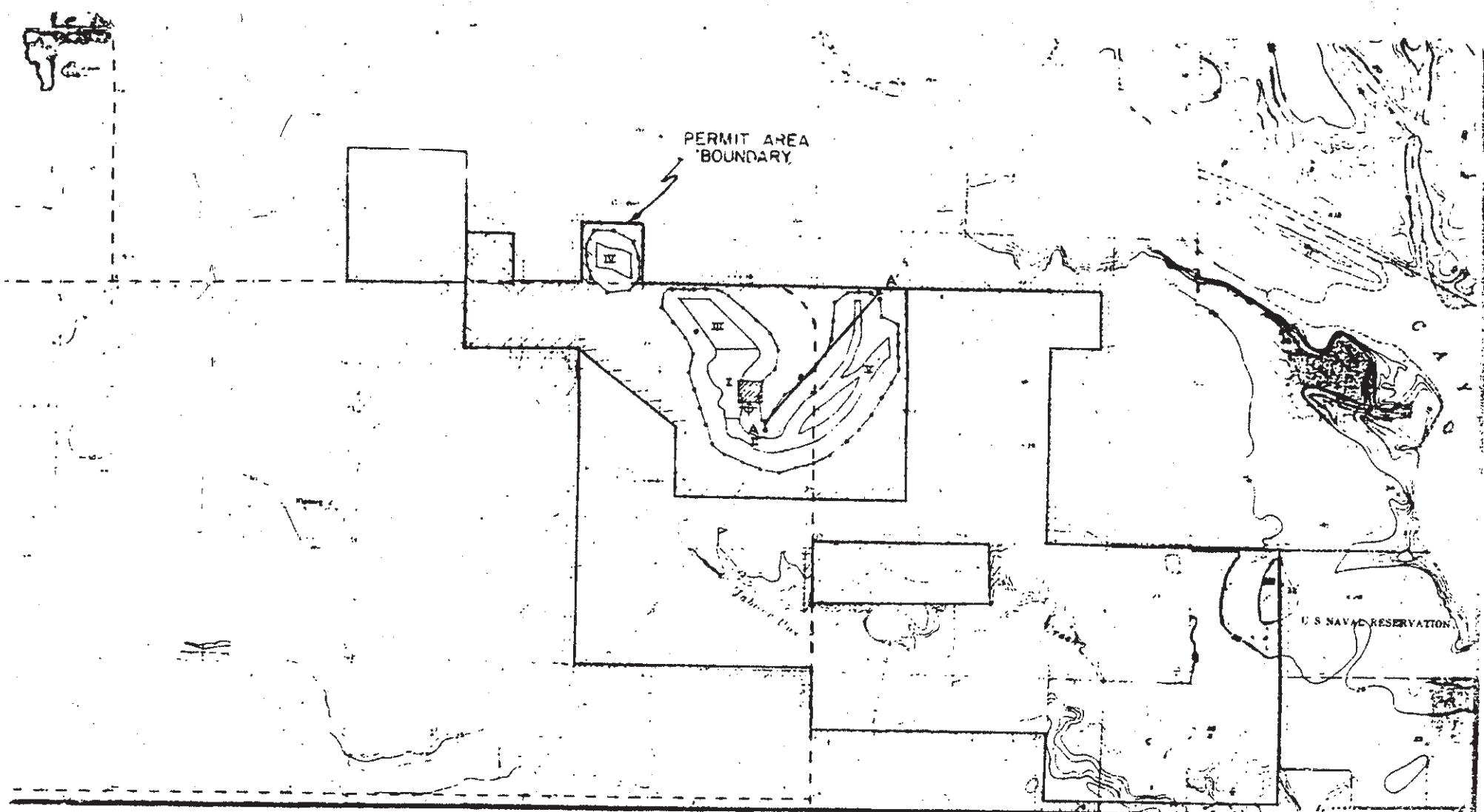
What is status of
 oil and gas holes
 active, abandoned, &
 plugged, open -
 Esp No W-16 & W-5

URANIUM RESOURCES INC.

KINGSVILLE DOME
 KLEBERG COUNTY, TEXAS

FIGURE 2

2000 0 2000 4000
 DALLAS, TEXAS
 MAY, 1983 2



EXPLANATION

- LEASE BOUNDARY
- PERMIT AREA
- BUFFER AREA
- MINE AREA
- ☒ PRODUCTION AREA
- ☒ PRODUCTION FACILITIES
- STATE HIGHWAY

- ❖ WASTE DISPOSAL WELL
- ▷ POINT OF SURFACE DISCHARGE
- A—A' Cross Section

URANIUM RESOURCES INC.

KINGSVILLE DOME
KLEBERG COUNTY, TEXAS

MINE PLAN
FIGURE 3

2000 10 2000 4000

DALLAS, TEXAS 500

MAY, 1983

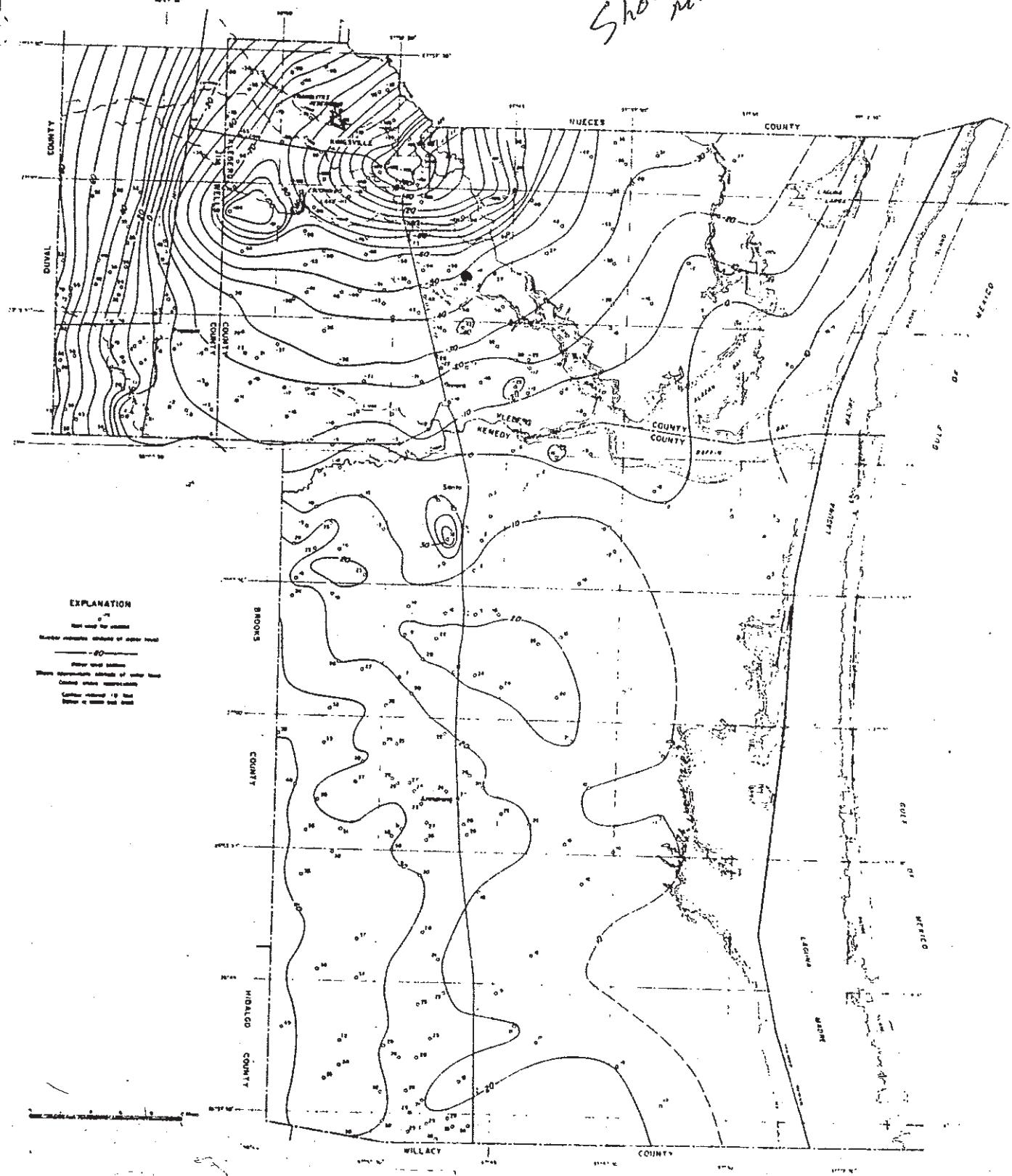


Figure 4
Approximate Altitude of Water Levels
in Wells in the Goliad Sand, 1968-69

URANIUM RESOURCES INC.
KINGSVILLE DOME PROJECT

GEOLOGIC CROSS SECTION THROUGH PERMIT AREA

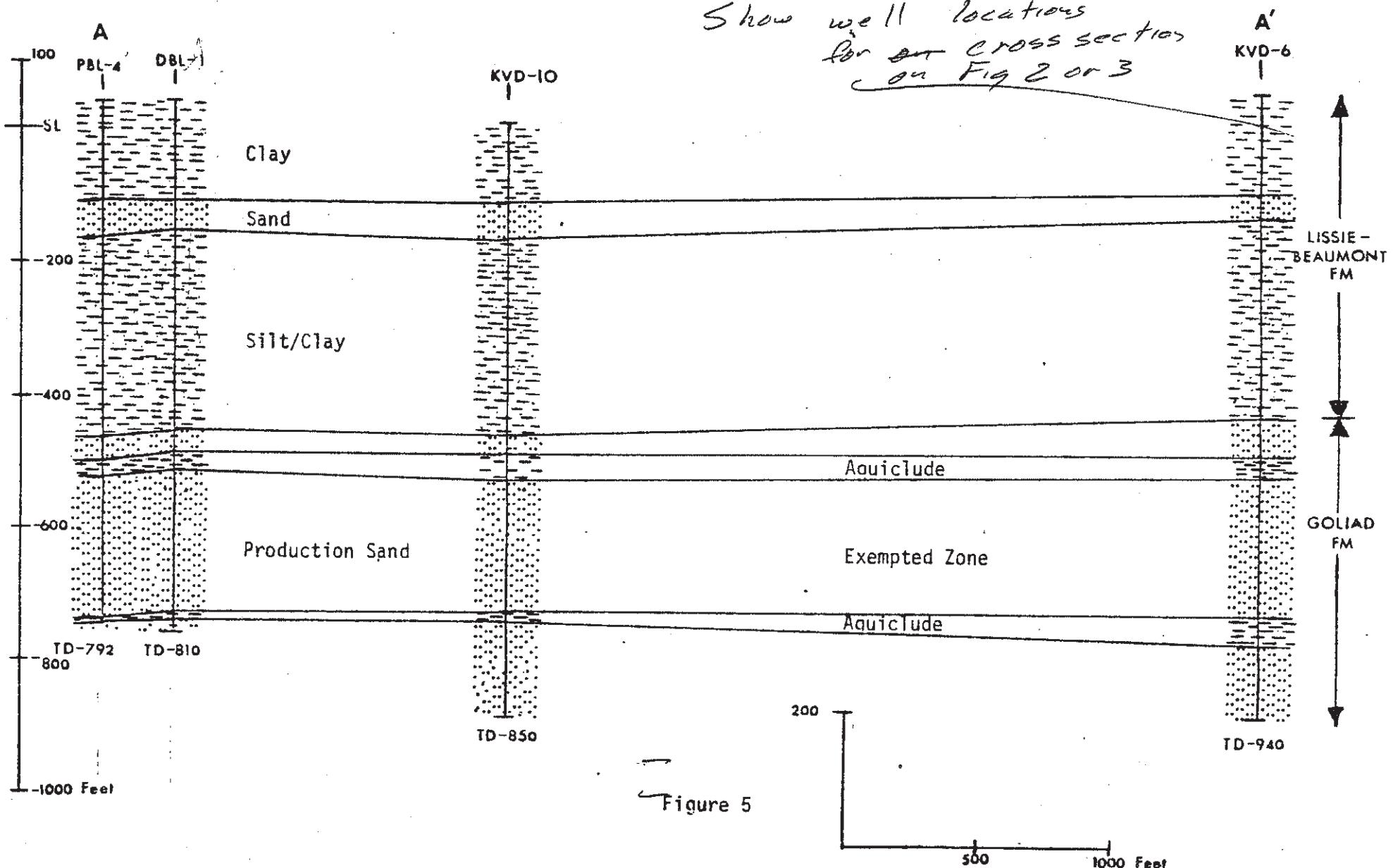


Figure 6

Mining and Restoration Schedule

Mine Area No.	<u>Mining</u>		<u>Restoration</u>	
	Begin	Complete	Begin	Complete
I	January 1985	September 1986	October 1986	March 1988
II	October 1985	September 1987	October 1987	June 1989
III	October 1986	September 1988	October 1988	March 1990
IV	October 1987	September 1989	October 1989	March 1991
V	October 1988	September 1990	October 1990	June 1992

TABLE 1
WATER SUPPLY WELLS

<u>Well #</u>	<u>TDWR #</u>	<u>Casing Type</u>	<u>Type Completion</u>	<u>Bottom Depth</u>	<u>Use</u>	<u>Water Level</u>	<u>Owner</u>	<u>Production Method</u>
WW-2		S	N/A	640	Domestic	N/A	A. M. Cumberland Rt. 1, Box 238 Kingsville, TX	submersible pump <i>Prob Gated</i>
WW-4		S	Perforated	700	Domestic	N/A	Stanley Dietz Rt. 1, Box 432 Kingsville, TX	submersible pump <i>Prob Gated</i>
WW-5		S	N/A	656	Domestic	N/A	F. Radford Rt. 1, Box 418 Kingsville, TX	submersible pump <i>Prob Gated</i>
WW-7		S	N/A	640	Domestic	N/A	Patricia Perez Rt. 1, Box 432 Kingsville, TX	windmill
WW-8		S	N/A	986	Domestic	N/A	J. L. Robertson Rt. 1, Box 424 Kingsville, TX	submersible pump
WW-9		S	Perforated 683-734	734	Domestic	100±	B. W. Bippert Rt. 1, Box 421 Kingsville, TX	windmill

How about WW-17, 13, 12, 10

TABLE 2
MAJOR REGIONAL WELLS

<u>Well #</u>		<u>Type Completion</u>	<u>Casing Depth</u>	<u>Total Depth</u>	<u>Water Level</u>	<u>Distance</u>
107	Kingsville Park	N/A	1074	1074	N/A	5 miles
201	Naval Air Station	screen - 89 ft.	791	791	158' (1960)	5 miles
202	Naval Air Station	screen - 205 ft.	795	795	165 (1960)	5 miles
203	Naval Air Station	screen - 225 ft.	725	725	166 (1960)	4½ miles
209	Naval Air Station	screen - 540-670 ft.	675	675	N/A	4½ miles
402	Pan American School	screen - 583-675 ft.	625	625	N/A	4½ miles
403	Pan American School	screen - 571-613 ft.	613	613	N/A	4½ miles
404	Pan American School	screen - 587-625 ft.	625	625	N/A	4½ miles
408	G. R. Dietert	N/A	620	620	109 (1968)	3½ miles
410	Ricardo	screen - 600-680 ft.	680	680	140 (1965)	4 miles

Probably
same
zone as
mine

Most probably gelled wells

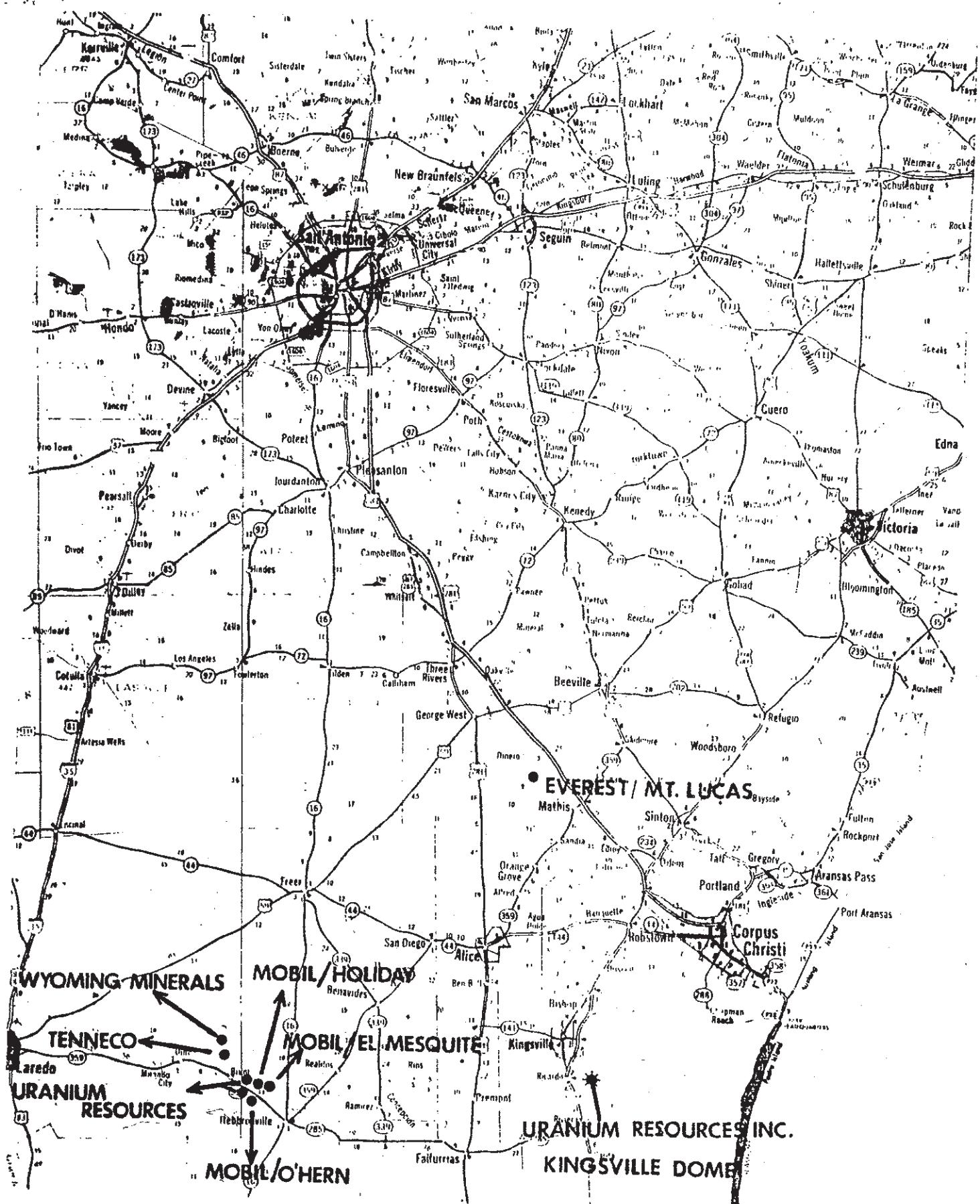


FIGURE 7
ADJACENT URANIUM MINES

Application for a Class III Underground Injection Control (UIC) Permit to conduct in situ uranium mining under provisions of Chapters 26 and 27, Texas Water Code, for Uranium Resources, Incorporated, Kingsville Dome Mine site, Permit No. UR02677.

Technical Summary

Uranium Resources, Inc. has applied to the Texas Department of Water Resources for a Class III Underground Injection Control Permit at the Kingsville Dome Mine. The site is located approximately eight miles south of Kingsville, adjacent to FM 1118 in Kleberg County, Texas.

The permit area for this in situ uranium mine is 790 acres within a leased area of 3,333 acres. The applicant has currently identified five mine areas in which production wellfields will eventually be installed. Delineation drilling is expected to continue in the permit area to define additional production areas. A non-ammonia based leaching solution will be used at the Kingsville Dome site. Mechanical integrity for all injection/production wells will be demonstrated by cementing records and a pressure test.

The production zone is located in three sand units of the upper Goliad Formation, each approximately 50 feet thick. Mineralization occurs at the depth interval of 520 to 800 feet below land surface, or equivalently, 480 to 760' feet below mean sea level. These sands are overlain and underlain by clays which are effective aquiclude and areally extensive. Production is scheduled to begin at the Kingsville Dome site in January of 1985 and to be completed by September of 1990. Restoration of the five designated mine areas is scheduled to be completed by June of 1992.

During operation an alkaline solution is injected into the uranium bearing formation through a pattern of injection wells. The uranium is solubilized by the leaching solution and is pumped from a pattern of recovery wells to the processing plant where uranium is extracted by ion exchange. This barren solution is then reconstituted with leaching agents and recycled to the field for reinjection. Continuous excess water withdrawal will provide control of leachate movement by creating a hydraulic sink and a consequent flow of ground water toward the area being produced. Monitor wells will provide horizontal and vertical surveillance of ground-water quality to insure confinement of leachate to the subsurface mining zone.

Prior to initiating production in a particular production area, the applicant is required by the proposed permit to obtain a Production Area Authorization from the Texas Water Commission. The Authorization Application requires baseline water quality and hydrologic information derived from sample analyses, and a pump test. To obtain baseline water quality, the operator shall complete representative wells in the Production and Non-Production Zones (Aquifers) within the Production Area and the surrounding mine area and complete water sample analyses for these wells. This data will be used to establish restoration values and control parameter limits. The pump test is conducted to verify hydraulic connection between production wells and production zone monitor wells and a lack of hydraulic connection between production zone aquifers and non-production zone aquifers. Additionally, permeability variations, barriers, and recharge effects are determined from the test.

3 Have any pump tests been conducted? If so, results?

Within 18 months of the date on which mining commences, the operator must complete one or more restoration demonstrations. The demonstration consists of leaching an isolated production pattern under the proposed commercial activity conditions for at least three months. After the leaching phase, a demonstration of restoration will be initiated and will continue until the affected ground water is restored to levels consistent with baseline.

Before mining commences in additional production areas the applicant will install production well fields and contaminant-monitoring systems. Supporting process facilities previously installed will continue to be used. The distance between injection and production wells and their configuration will vary with the geochemical and hydrologic conditions of the production zone. Production and Non-Production Zone monitor wells are sampled and injection wells are tested for integrity on a regular basis and periodic reports are submitted to the Department. Corrective action is required if leachates are detected in monitor wells or if defective injection wells are detected.

After mining in a production area has been completed, the affected ground water is to be restored to stable quality consistent with baseline. After verification of restoration, wells are plugged and the area returned to its original or beneficial condition. After all production areas are mined out, the plant and related facilities are removed. All wastes are either removed from the site or encapsulated to ensure long-term containment.

The permittee is required to secure and maintain a performance bond or other form of financial assurance to provide for proper plugging and abandonment of all injection and production wells on site. The amount of the financial security is \$73,714.00 and will be reviewed annually and may be altered at a future date to reflect the prevailing general economic conditions.

The subject permit does not authorize surface discharge. Matters relating to radioactivity are regulated and authorized by the Texas Department of Health through a Radioactive Materials Handling License. Any disposal well installed to serve this mine will be authorized by separate permit under Chapter 27 of the Texas Water Code.

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Uranium Resources, Inc.

Kingsville Dome Mining Project

Texas Department of Water Resources

Financial Assurance Estimate for Permit No. UR02677
November, 1983

Cementing the proposed 160 wells (8.0 days)	\$55,407.00
Cutting off 160 wellheads (3 feet below ground surface, 36.3 hours [1.5 days] at \$35.00/hour)	\$ 1,271.00
Consulting Fees: (500/day for 9.5 days)	<u>\$ 4,750.00</u>
Subtotal	\$61,428.00
Contingency fees of 20%	<u>\$12,286.00</u>
TOTAL	\$73,714.00

Wellfield Closure Cost Estimate

Uranium Resources, Inc.
Kingsville Dome Mining Project
Permit No. UR02677

Cement:

42 sks of cement
42 sks (160 wells) = 6,720 total sks cement

Cost:

6,720 sks cement	\$43,680.00
Mileage charge (10 miles)	\$ 2,327.00
Subtotal	\$46,007.00

Time:

8 days

Cost/day:

labor, equipment and contingency	\$ 1,175.00
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Total Cost/day charge (for 8 days):	\$ 9,400.00
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Total Project Cost	\$55,407.00
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